What is claimed is:

1. An image detector for detecting electromagnetic radiation, comprising:

a carrier layer; and

a photosensor, carried by said carrier layer, wherein each of the carrier layer and photosensor include a nonvanishing transparency to the electromagnetic radiation, and wherein at least two carrier layers and corresponding photosensors are arranged one above the other, such that the electromagnetic radiation is passable through them one after the other.

2. The image detector as claimed in claim 1, wherein each carrier layer carries a plurality of photosensors, arranged spatially on a respective carrier layer, wherein the plurality of photosensors are adapted to generate electrical signals in a manner dependent on the detection of electromagnetic radiation, and wherein the plurality of photosensors are jointly electrically contact-connected at least one of individually and within individual areas, so that the electromagnetic radiation is adapted to be detected in spatially resolved fashion.

3. The image detector as claimed in claim 2, wherein the at least one of individual photosensors and photosensor areas of each carrier layer are arranged at least one of congruently and in overlapping fashion at least one of above and below the at least one of individual photosensors and photosensor areas of the other carrier layers.

4. The image detector as claimed in claim 2, wherein the at least one of individual photosensors and photosensor areas of each carrier layer are arranged randomly, so that the at least one of photosensors and photosensor areas which are arranged randomly at least one of above and below the at least one of photosensors and photosensor areas of other carrier layers are jointly utilizeable for the spatially resolved detection of the radiation to be detected.

5. The image detector as claimed in claim 1, wherein organic photodiodes are used as photosensors.

6. The image detector as claimed in claim 1, further comprising:

at least one luminescent material layer, including a nonvanishing transparency to the electromagnetic radiation, wherein the at least one luminescent material layer is adapted to output a radiation of changed wavelength upon being excited by the electromagnetic radiation, the radiation of changed wavelength being detectable by the photosensors.

7. The image detector as claimed in claim 6, wherein at lest one of the at least one luminescent material layer and the carrier layer forms a common electrical contact for adjoining photosensors.

8. The image detector as claimed in claim 1, wherein at least one of the layer thicknesses and layer materials of the individual planes of photosensors are varied in such a way that all the planes of photosensors are adapted to generate detection signals of approximately identical magnitude if the electromagnetic radiation passes through them one after the other.

9. The image detector as claimed in claim 1, wherein the layer thicknesses of the photosensors increase in the order in which the electromagnetic radiation is adapted to pass through them.

10. The image detector as claimed in claim 2, wherein organic photodiodes are used as photosensors.

11. The image detector as claimed in claim 2, further comprising:

at least one luminescent material layer, including a nonvanishing transparency to the electromagnetic radiation, wherein the at least one luminescent material layer is adapted to output a radiation of changed wavelength upon being excited by the electromagnetic radiation, the radiation of changed wavelength being detectable by the photosensors.

12. The image detector as claimed in claim 11, wherein at lest one of the at least one luminescent material layer and the carrier layer forms a common electrical contact for adjoining photosensors.

13. The image detector as claimed in claim 3, wherein organic photodiodes are used as photosensors.

14. The image detector as claimed in claim 3, further comprising:

at least one luminescent material layer, including a nonvanishing transparency to the electromagnetic radiation, wherein the at least one luminescent material layer is adapted to output a radiation of changed wavelength upon being excited by the electromagnetic radiation, the radiation of changed wavelength being detectable by the photosensors.

15. The image detector as claimed in claim 14, wherein at lest one of the at least one luminescent material layer and the carrier layer forms a common electrical contact for adjoining photosensors.

16. The image detector as claimed in claim 4, wherein organic photodiodes are used as photosensors.

17. The image detector as claimed in claim 4, further comprising:

at least one luminescent material layer, including a nonvanishing transparency to the electromagnetic radiation, wherein the at least one luminescent material layer is adapted to output a radiation of changed wavelength upon being excited by the electromagnetic radiation, the radiation of changed wavelength being detectable by the photosensors.

18. The image detector as claimed in claim 17, wherein at lest one of the at least one luminescent material layer and the carrier layer forms a common electrical contact for adjoining photosensors.

19. The image detector as claimed in claim 2, wherein at least one of the layer thicknesses and layer materials of the individual planes of photosensors are varied in such a way that all the planes of photosensors are adapted to generate detection signals of approximately identical magnitude if the electromagnetic radiation passes through them one after the other.

20. The image detector as claimed in claim 2, wherein the layer thicknesses of the photosensors increase in the order in which the electromagnetic radiation is adapted to pass through them.

21. The image detector as claimed in claim 3, wherein at least one of the layer thicknesses and layer materials of the individual planes of photosensors are varied in such a way that all the planes of photosensors are adapted to generate detection signals of approximately identical magnitude if the electromagnetic radiation passes through them one after the other.

22. The image detector as claimed in claim 3, wherein the layer thicknesses of the photosensors increase in the order in which the electromagnetic radiation is adapted to pass through them.

23. The image detector as claimed in claim 4, wherein at least one of the layer thicknesses and layer materials of the individual planes of photosensors are varied in such a way that all the planes of photosensors are adapted to generate detection signals of approximately identical magnitude if the electromagnetic radiation passes through them one after the other.

24. The image detector as claimed in claim 4, wherein the layer thicknesses of the photosensors increase in the order in which the electromagnetic radiation is adapted to pass through them.

25. The image detector as claimed in claim 1, wherein the image detector is for detecting X-ray radiation.

26. An image detector for detecting electromagnetic radiation, comprising:

a plurality of layers, each layer including at least one photosensor, wherein each of layer and photosensor include a nonvanishing transparency to the electromagnetic radiation, and wherein the plurality of layers are arranged one above another, such that the electromagnetic radiation is passable there-through, one afteranother.

27. The image detector as claimed in claim 26, wherein the image detector is for detecting X-ray radiation.

28. The image detector as claimed in claim 26, wherein each layer includes a plurality of photosensors, arranged spatially on a respective layer, wherein the plurality of photosensors are adapted to generate electrical signals in a manner dependent on the detection of electromagnetic radiation, and wherein the plurality of photosensors are jointly electrically contact-connected at least one of individually and within individual areas, so that the electromagnetic radiation is adapted to be detected in spatially resolved fashion.

29. The image detector as claimed in claim 28, wherein the at least one of individual photosensors and photosensor areas of each layer are arranged at least one of congruently and in overlapping fashion at least one of above and below the at least one of individual photosensors and photosensor areas of the other layers.

30. The image detector as claimed in claim 28, wherein the at least one of individual photosensors and photosensor areas of each layer are arranged randomly, so that the at least one of photosensors and photosensor areas which are arranged randomly at least one of above and below the at least one of photosensors and photosensor areas of other layers are jointly utilizeable for the spatially resolved detection of the radiation to be detected.